

DESCRIPTIONS AND NOTES CONCERNING SOME ORIENTAL APHELOCHEIRUS
(HEMIPTERA: APHELOCHEIRIDAE)IRA LA RIVERS¹

ABSTRACT: Two new species of *Aphelocheirus* are described from India, and *A. pallens* Horvath is noted from additional localities in New Guinea.

During an investigation of the Naucoridae and Aphelocheiridae of New Guinea, specimens were examined from surrounding areas in an attempt to understand the relationships and origins of the very unique fauna which exists in New Guinea. This work turned up additional records of *Aphelocheirus pallens* Horvath 1899 in New Guinea as well as two new species of *Aphelocheirus* from a related fauna in the southeastern Asiatic mainland.

Aphelocheirus pallens Horvath

In 1899, Horvath described this species from German New Guinea, in the northeast section of the island. In my perusal of the literature, I have not seen it recorded elsewhere, but in the Leiden and Bishop museums' collections, there are additional specimens from the western part of New Guinea, as follows: Neth. Ind.-American New Guinea Exped., Araucaria Camp, 800 m, 1939 Mar. 3, L. J. Toxopeus; Same, Mist Camp, 1800 m, (Leiden Museum localities); New Guinea, Neth., Bodem, 10 m, 11 km SE of Oerber-faren, 1959 July 7-17, T. C. Maa, and New Guinea, NW, Nabire, S. Geelvink Bay, 10-40 m, 1962 Oct. 13, N. Wilson (Bishop Museum localities).

Aphelocheirus pygmaeus, new species

Figure 1

General: The smallest species that I have seen in the genus, measuring 4 by 2 mm, approaching the genus *Potamocoris* of the family Naucoridae in size and gross appearance. Darker in color anteriorly with some yellow bordering, hemelytra lighter. Venter blackish-brown with some yellow lightening anteriorly, legs yellowish.

Head: Blackish brown, shiny with sparse pitting. Anteclypeus greatly expanded and protuberant before eyes, its anterior outline reasonably smoothly circular. Eyes blackish, essentially flush with surface; hyperocheal angle not discernible as such. Labrum large, prominent. Head ratios are: (1) Total length-to-width (including eyes) 25: 34 (74%), (excluding eyes and utilizing widest interocular

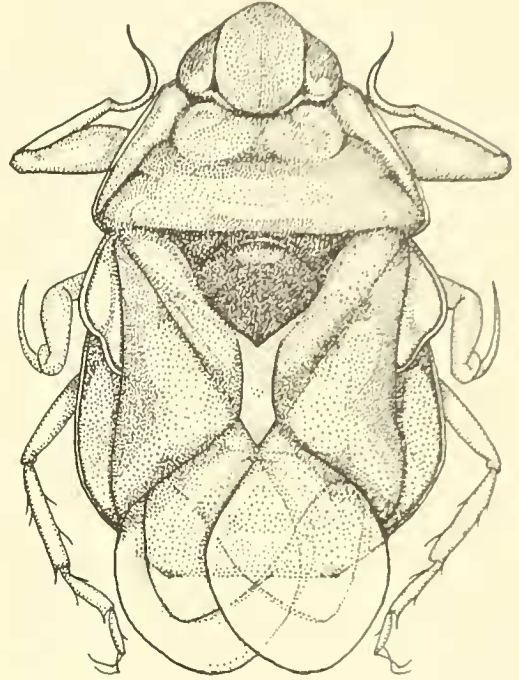


Figure 1. *Aphelocheirus pygmaeus*, new species, holo-type female.

space) 25: 21 (84%); and (2) anterior distance between eyes to posterior distance between eyes 21: 21 (inner margins are not parallel, but curved concavely inwardly).

Pronotum: Angular in outline, disk brownish black, lateral and posterior borders widely yellow. Surface somewhat uneven. Lateral edges smooth, nearly straight, posterior angle rounded. Anterior edge between eyes essentially straight, posterior edge bow-shaped. Venter with weak median sternal keel, large coxal cavities and coxae, and propleural flaps widely separated by coxal cavities. Pronotal ratios are: (1) Width between anterior angles to width between posterior angles 35: 60 (58%); and (2) median length to greatest width 20: 60 (33%).

Scutellum: Large, blackish, shiny; ratio of three sides, anterior and two laterals 35: 25: 25.

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Hemelytra: Translucent brownish; claval sutures distinct; membranes very large, comprising almost half hemelytral length and milky transparent. Opaque region microroughened but shiny. Embolium indistinctly delineated, the inner margin discernible and apparently extending caudally to intersect outer hemelytral edge so that posterior emboliar border is not at right angles to the long axis of the body; outer edge weakly flared externally about at midline; ratio of length-to-width 31:4 (13%). Hemelytra reaching caudally beyond tip of abdomen; connexival edge barely exposed in anterior half of abdomen. Wings fully functional.

Venter: The prothoracic venter has been discussed above. Meso- and meta-thoracic ventra blackish, as is the abdomen. Connexiva not distinguishable, posterior abdominal angles non-spinose. Abdominal segment I with a prominent, whitish, narrowly elongate static sense organ (*statexta*) near external edge; spiracles on segments II, III, IV and V each in form of a short series of transversely-arranged dots. Female subgenital plate narrowing rather sharply to an almost pointed tip.

Legs: *Proleg* — Coxa large, angularly-elongated. Trochanter prominent. Femur moderately incrassate, flattened, ratio of length-to-width 30:15 (50%), length 1.1 mm. Tibia long, narrow, tubular, bearing at its tip a two-segmented tarsus terminating in two small claws.

Mesoleg — Coxa and trochanter similar to proleg. Femur intermediate between the predatory incrassation of profemur and the elongated ambulation of metafemur, but not definable as incrassate; dense row of conspicuous yellow hairs on inner or posterior border; ratio of length-to-width 29:10 (34%), length 0.9 mm. Tibia long, narrow, tubular, slightly widening distally, heavily beset with large, yellow spines, these clustered rather solidly at distal end; ratio of length-to-width 25:3 (12%), length 0.85 mm. Tarsus 3-segmented, first segment minute, remaining two long, tubular, terminating in two prominent claws.

Metaleg — Much longer than other legs. Coxa and trochanter larger versions of mesoleg. Femur elongate, flattened, slightly bowed but not swollen as much as mesofemur; ratio of length-to-width 38:10 (26%), length 1.2 mm. Tibia long, narrow, rounded, slightly widening distally, sparsely spined, fringe of long swimming hairs on inner margin; ratio of length-to-width 33:5 (17%), length 1.1 mm. Tarsus very long and narrow, as long as tibia and consisting of 3-segments, the first minute; with a thick brush of swimming hairs on inside edge, and terminating in two large claws.

Type Locality and Etymology: Holotypic female, allotype and one paratype from: East India, Assam, Kohara, Kaziranga, 1959 Oct. 7, E. S. Ross and

D. Q. Cavagnaro, 110 m. Deposited in the California Academy of Sciences. The name *pygmaeus* is appropriate for this is the smallest of all known *Aphelocheirus*.

Comparative notes: *Aphelocheirus pygmaeus* is virtually unique in the family by size alone. I know of nothing else which even approaches it in this respect. In fact, it bears more superficial resemblance, on this basis, to the naucorid genus *Potamocoris*, than it does to other aphelocheirids.

Aphelocheirus nathani, new species

Figure 2

General: This description is based on the micropterous form as being the more common, with comparisons, in appropriate places, with the winged form. Lighter in color anteriorly, the darker abdomen lighter along edges. Winged form darker mainly due to blackish hemelytra and more color development on pronotal disk. Venter yellowish, with no significantly darker areas. Winged form darker ventrally. Size 9.5 by 6.5 mm (winged form 9.5 by 5.75 mm).

Head: Shiny, smooth, yellow except for diffuse brownish posteriorly. Keystone-shaped, broadly and moderately protuberant between eyes in anteclypeal region. Eyes darker, inner and outer margins subparallel, the *hyperocche* angle prominent

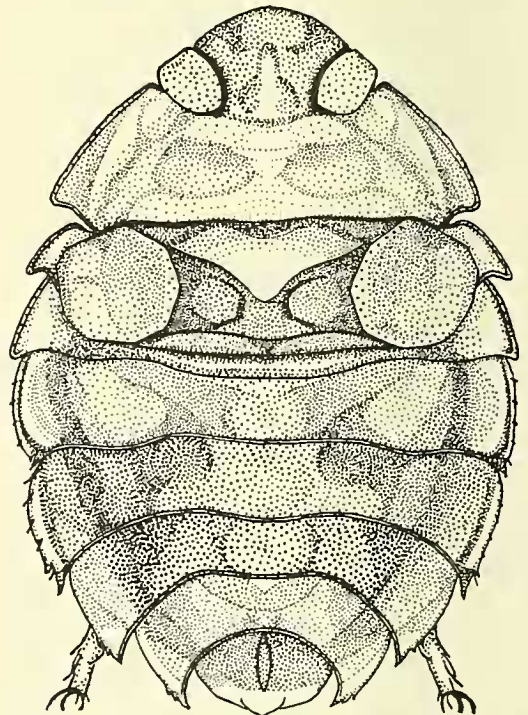


Figure 2. *Aphelocheirus nathani*, new species, holotypic female, micropterous form.

anteriorly, eyes essentially flush with general surface. Labrum prominent, broad and weakly pointed, ratio of length-to-width 16:22 (73%). Head ratios are: (1) Total median length-to-width (including eyes) 65:78 (83%) across hyperocheal angles, (excluding eyes) 65:55 (85%) anteriorly; (2) anterior distance between eyes to posterior distance between eyes 55:40 (73%); and (3) anterior distance between eyes to inner eye length 55:40 (73%).

Pronotum: Yellow, with two diffuse brown areas centrally, surface shiny but weakly roughened. Posterior border double-angulate, the outer angle being the usual posterolateral one, the inner angle being a moderate, caudally-directed angulosity of the border; neither angle long or sharp. Lateral border smoothly curved; percent of curvature (as viewed perpendicularly to the frontal plane of section of the specimen as a whole) about 15 (68:10). Venter yellow, coxal cavities large, median area moderately keeled. Internal propleural flaps widely separated by coxal cavities. Ratios are: (1) Width between anterior angles to width between posteroexternal angles 43:92 (47%); (2) width between anterior angles to width between postero-internal angles 43:73 (59%); (3) median length to greatest width 25:92 (27%); and (4) median length to parallel length from anterior angle to posterior border 25:39 (64%).

Winged form with straighter lateral borders, angles closer together, less pronounced, appearing more as the two edges of a longer, single angle which had been cut across diagonally, thus producing two reduced angles. Pronotum longer, broader, the proportions being: (1) Width between anterior angles to width between posteroexternal angles (=widest part of pronotum) 43:87 (49%); (2) width between anterior angles to width between postero-internal angles 43:78 (35%); (3) median length to greatest width 27:87 (31%); and (4) median length to parallel length from anterior angle to posterior border 27:39 (69%).

Scutellum: Short, broad, yellow with some diffuse brownish areas anteriorly. Ratio of three sides, anterior and two laterals, 55:36:36. In winged form, scutellum proportionally larger, darker, more rugose, ratio 50:38:38.

Hemelytra: Yellow, texture same as pronotum; rounded, abbreviated stumps not reaching midline and not reaching posterior border of first abdominal segment. Anterior region of embolium present, the outer angle being sharp and slightly recurved. Winged form with fully developed wings, blackish brown, texture different from pronotum, being smoother with widely scattered tiny blackish tubercles; claval and membranous sutures prominent, the membrane distinct; embolium well developed,

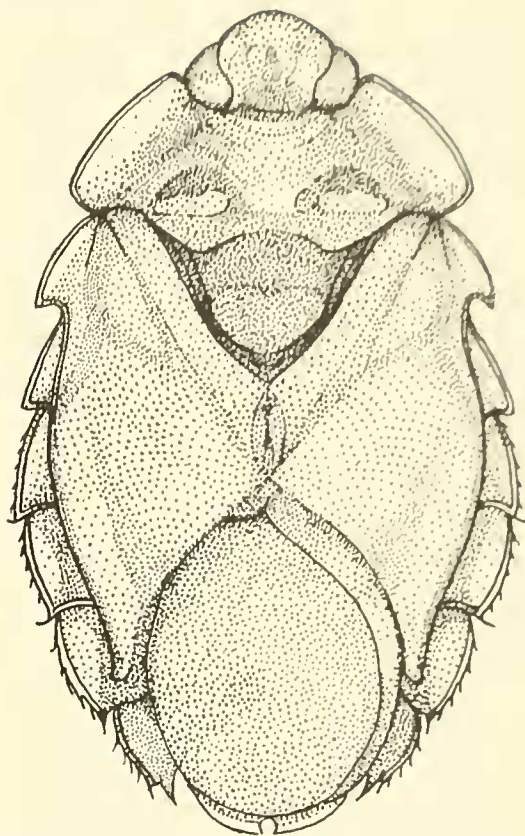


Figure 3. *Aphelocheirus nathani*, new species, paratype, macropterous form.

lighter laterally, long and narrow, the outer angle broad but distinct; embolium length-to-width 90:20 (22%), but narrower than this would indicate since the width of 20 includes the outer angle; wings narrow, rather markedly exposing the connexival edge.

Venter: The prothoracic venter has been discussed above. Meso- and meta-thoracic ventra and abdomen yellow, darker in the winged form. Static sense organ prominent, elongated, small tip on posterior end; spiracles typically baliopic, the dots spreading laterally in all segments except I. Connexivum narrow, widening posteriorly in caudal segments, posterior angles sharp on all segments, becoming larger caudally. Female subgenital plate broadly wedge-shaped, narrowing sharply to a bluntly rounded tip.

Legs: *Proleg* — Coxa large, angularly-globular. Trochanter prominent. Femur weakly incrassate, flattened, well-furred along tibial closure edge; ratio of length-to-width 65:24 (37%), length 2 mm. Tibia long, narrow, tubular, bearing a three-segmented tarsus whose first segment is minute, the remaining two elongate and terminating in two prominent claws.

Mesoleg — Coxa and trochanter similar to proleg except larger. Femur weakly incrassate, similar to profemur but larger, prominently haired along inner or posterior margin; ratio of length-to-width 63:20 (32%), length 2.1 mm. Tibia similar to protibia but proportionally broader, hairier and with a conspicuous armament of reddish spines, particularly along outer edge and a loose, transverse, terminal row; ratio of length-to-width 48:8 (17%), length 2 mm. Tarsus a larger edition of protarsus.

Metaleg — Much larger than pro- and meso-legs, with coxa more globular. Femur long, rather flat, not truly incrassate in any sense, thinly furred along posterior or inward edge; ratio of length-to-width 96:28 (29%), length 3 mm. Tibia relatively longer version of mesotibia, spined along edges and with a conspicuous fringe of long, yellow swimming hairs along internal or posterior border; ratio of length-to-width 90:9 (10%), length 3.1 mm. Tarsus large, much elongated, at least twice the length of mesotarsus and heavily equipped with swimming hairs inwardly.

Type Locality and Etymology: Holotypic female, allotype and 8 paratypes (2 being winged forms) from: South India, Madras, Anamalai Hills, Kadamparai, 1963 June, P. Susai Nathan, 1050 m; 2 micropterous paratypes from Anamalai Hills, Cinchona, Nathan, 1959 April, 1050 m, under debris of stream; 1 winged paratype from Coimbatore, Nathan, 1959 February. All specimens in the

collection of the Biological Society of Nevada, Verdi, Nevada. I am pleased to name the species after its collector, who has diligently sampled the naucorid fauna of his region.

Comparative notes: *Aphelocheirus nathani* appears to be related to the populations east, rather than west, of India, although the continuous and constant land masses to the west would appear a more likely continuum from which it could be derived. Lacking the distinct and prominent connexival spines of the *A. aestivalis* (Fabricius) 1803 group to the west, *A. nathani* is quite close to the Philippine species described by Usinger, *A. philippinensis* 1938 and *A. uichancoi* 1938, particularly the latter, which is about the same size. From *A. uichancoi*, *A. nathani* differs in the lighter color, somewhat smaller size and much different head proportions, *uichancoi* having the anteclypeal region much more extensively developed anteriorly between the eyes. The emboliar flare is also more pronounced in *nathani* and is longer. Connexival spines are somewhat more prominent in *uichancoi*.

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NEW SPECIES OF *POLYDORA* (POLYCHAETA: SPIONIDAE) FROM THE COAST OF CALIFORNIA

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ABSTRACT: Four new species of *Polydora* are described. All species bore into calcareous substrata and occur in California, with one ranging as far north as British Columbia.

During the years 1961-70 numerous collections of intertidal polychaetes were made along the California coast by us. Examination of these collections has resulted in the finding of four new species. These are added to the genus *Polydora* which is already well represented in California. Hartman (1969) recorded 13 species in her "Atlas of the Sedentariate Polychaetous Annelids from California."

The four new species are described herein and information is presented on their distribution and general ecology. In addition, some information is

provided on reproduction in *P. elegantissima*.

The holotypes and one set of paratypes are deposited in the Allan Hancock Foundation, University of Southern California. Additional paratypes are deposited in the United States National Museum, Washington, D.C.

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